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SURGERY FOR CEREBRAL SYNDROMES
CAUSED BY HYPERTONIA

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Surgery is one of the new methods for treating hypertonic syndromes evidenced either as a dynamic affection (cephalalgia, vertigo, throbbing noises) or as an organic affection cerebral hemorrhage, (vascular thrombosis). In all types of operations for these conditions, it is necessary to bring about desensitization of the vessels in the abdominal region and the lower limbs. Many of the experts contend that vascular tonus increases in hypertonia cases as a result of the impulses which the flat muscles of the vascular walls receive from the central nervous system. Thus a surgical dissection of the link between the central nervous system and the vessels of the abdominal region and the lower extremities lowers their tonus and thus brings about a decrease in blood pressure.

Many of the questions which would arise with regard to this type of operation can be answered by a brief summary of data obtained from operations on 40 cases brought to the Institute of Neurosurgery imeni N. N. Burdenko, Acad Med Sciences USSR.

One of the most widely used methods consists in isolating the boundary column nodes and severing the vermiform nerves simultaneously with an isolation of the solar plexus. In addition to this, many specialists perform sections of the nephritic-portal nodule and carry out desensitizing of the kidney vasculature by encapsulating the kidney. The method used by the author differs slightly from the above-mentioned procedure. Their method consists basically of section of the large and small vermiform nerve and incisions of the second and third lumbar nodules of the boundary column. The reasons

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for this procedure are quite evident. Formerly, ganglion sympathectomy was recommended as the best method for desensitizing various parts of the body. However, the effects of this procedure were of short duration. The authors' technique does not disrupt the nodules which send impulses to the diseased organ, but there is an effective severance of the link between the organ and the spinal chord.

In their operation the authors did not isolate the solar plexus where the vasoconstrictors of the abdominal region originate, nor the fourth or fifth lumbar nodules or the cross nodule, where the vasoconstrictors for the lower extremities originate. After the operation the patients are kept in the hospital for a month and a half before being released. Constant checks are maintained, and if the need arises, the operation is repeated.

In all cases the clinical chart of the patient's progress notes first of all the state of the nervous system. In the great majority of cases it was indicated that the patient was suffering from the dynamic type of affection, with a correlative disruption of his physical endurance and emotional characteristics. Frequently, symptoms attesting to damage to the brain function were reflected in organic changes to the brain vasculature.

Some of the patients had widely varying arterial blood pressure. At times it was normal for long periods, and at other times it remained stable at unreasonably high values, for example, 180-200, etc. Of the 40 patients operated on, 20 had operations performed on one side only, while the other 20 had bilateral operations, at intervals of one month to one year between operations.

Results of operations were not similar in all cases. In patients of the first group results were generally as follows: decrease of blood pressure as soon as the operation was performed; head pains, vertigo, and noise disappeared. In some cases, however, blood pressure started to rise again after a period of 2 - 6 months. A second operation improved the general condition of the patient and lasted for a relatively longer period. Among patients of the second group blood pressure did not decrease after the first operation.

Some of the patients were put in a third class, those whose pressure decreased immediately after the first operation, but who had a recession from one to 6 months after the operation. In eight of the cases no positive results were obtained.

No serious postoperative complications were noticed in any of the cases. In some of the patients, particularly after the second operation, there occurred adynamia and an increase in somatic and intellectual exhaustion. However, these symptoms passed away after a few weeks following the operation.

At this point the reader may well ask, "What is the mechanism whereby a cure is effected after operations in cases of hypertonia?" Many of the specialists claim that it is brought about by the decrease in blood pressure, expansion of the vessels in the abdominal region and the lower extremities and the formation of a reservoir where a large amount of blood can be stored. It cannot be denied that these factors have positive action. But it is also necessary to mention several other points. For example, during the operation there is vascular anesthesia in the abdominal region and the lower extremities, and the muscular tonus in the arterial walls falls to a favorable level due to the reflex impulses from the walls of the vessels. The impulses originating in the vessels of the abdominal region and the lower extremities maintain the tonus of the vessels in other parts of the body. Thus, a decrease of the tonus in the vessels of the abdominal region and the lower extremities has an inhibitive action on the tonus of the other parts of the body. It is also

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necessary to consider the venal system of the lower half of the body. Severance of the sympathetic channels to the venal system has an effect similar to that on the arterial system. Thus, the veins of the lower part of the body are expanded. There is also an action which inhibits the secretion of renin and adrenalin.

It is true that in most cases the operation was followed by a decrease in the arterial pressure and a general improvement in the condition of the patient. However, it must be noted that in many cases, there was a noticeable improvement in the condition of the patient in spite of the fact that arterial pressure did not take a considerable dip.

This operation has no direct action on the superior cervical sympathetic system or the stelliform nodules where the vasoconstrictors for the cerebro-vascular system originate. However, it has been shown by pathologic means that changes brought about in one of the vesicles brings about a sort of "sympathetic" change in some of the other close-lying vesicles. There is a very definite reaction in nodules which are in a pathologic state. It follows, therefore, that pathological changes in the stelliform and sympathetic nodules can bring about changes in the lumbar nodules.

The exact mechanism of the operation is not known. However, this does not detract from the fact that there is a beneficial decrease in blood pressure, and that there is a general improvement in the nervous system. The authors are, therefore, not in any way hesitant about recommending this treatment in cases of cerebral syndromes caused by hypertonia.

There is only one major objection to the use of this surgical treatment. Sclerosis of the nervous system could possibly follow this operation. In 15 of the cases there was positive development of sclerosis of the vesicles of the nervous system, but research showed that these cases already had positive indications of sclerosis. It is therefore necessary to make complete and thorough examination of the patient before attempting the described operation. It is also necessary to check the heart condition as well as the kidneys before this operation. It must be remembered that the earlier the operation is performed the better the chance for complete recovery. If the disease is not treated at an early stage, there is the possibility of morphologic changes in the walls of the vesicles. If this occurs, there is no point in carrying out the operation as severance of the link between the vesicles and the central nervous system will have no effect.

The authors are convinced of the value of their method. It is a rational operation, physiologically suitable, and is as effective as some of the more complex operations which do much to curb the natural life of the patients.

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